CLAIMS

1. A direct oxidation fuel cell system assembly, comprising:

(A) a direct oxidation fuel cell system, having:

(i) a direct oxidation fuel cell including a membrane electrode assembly having a protonically-conductive, electronically non-conductive membrane with an anode face and an opposing cathode face; and

(ii) a fuel source and delivery apparatus that delivers liquid fuel to the anode face of said fuel cell; and

(iii) a gas separator to remove carbon dioxide from the fuel cell;

(B) an enclosure, conforming substantially to the shape of an exterior body of the fuel cell system, said enclosure being substantially comprised of at least one layer of material that is non-reactive to the liquid fuel delivered to said fuel cell.

2. The direct oxidation fuel cell system assembly as defined in claim 1 wherein said enclosure includes at least one layer of material having color-changing properties that are effective in the presence of liquid to provide a visual indication of a leak.

3. The direct oxidation fuel cell system assembly as defined in claim 1 wherein at least one layer of said enclosure material is gas permeable, liquid impermeable.

4. The direct oxidation fuel cell system assembly as defined in claim 1 wherein at least one layer of said enclosure material is a plastic film that shrinks to conform to said fuel cell system upon heating said layer.

5. The direct oxidation fuel cell system assembly as defined in claim 3 wherein at least one layer of said enclosure material is gas selective for carbon dioxide to pass therethrough.

6. The direct oxidation fuel cell system assembly as defined in claim 1 wherein said enclosure further comprises multiple layers of material wrapping said fuel cell system.

7. The direct oxidation fuel cell system assembly as defined in claim 1 wherein said enclosure includes a first layer of material wrapping at least one component of said fuel cell system and a second layer of material wrapping substantially the entirety of said fuel cell system.

8. The direct oxidation fuel cell system assembly as defined in 1 combination with an electronic device to which the fuel cell is providing power, comprising:

said direct oxidation fuel cell system being attached to said electronic device by said enclosure material and secured to said device with fasteners.

9. An enclosed direct oxidation fuel cell, comprising:

(A) a direct oxidation fuel cell including a membrane electrode assembly having a protonically-conductive, electronically non-conductive membrane with and anode face and an opposing cathode face; and

(B) an enclosure, conforming substantially to the shape of an exterior body of the fuel cell, said enclosure being substantially comprised of at least one layer of material that is non-reactive to the liquid fuel delivered to said fuel cell.

10. The enclosed direct oxidation fuel cell as defined in claim 9 wherein at least one layer of said enclosure is comprised substantially of a material that shrinks to conform fit tightly on said fuel cell upon heating.

11. The direct oxidation fuel cell assembly as defined in claim 9 wherein at least one layer of said enclosure material includes color-changing properties that are effective in the presence of liquid to provide a visual indication of a leak.

12. A method of sealing and providing air filtration to a direct oxidation fuel cell system, the method including the steps of:

(A) identifying at least one component of said fuel cell system that is to be sealed and to receive air filtration;

(B) selecting as an enclosure, at least one layer of a material that is non-reactive with a fuel substance used by said fuel cell; and

(C) covering substantially the entirety of said component with at least one layer of said material so that said enclosure conforms to an exterior profile of said component.

13. The method as defined in claim 12 including the further step of selecting said enclosure material from the group consisting of Teflon, PVC, and polyolefins.

14. The method as defined in claim 12 including selecting as said enclosure at least one layer of a material that is a plastic film that conforms to said fuel cell component upon applying heat thereto.

15. The method as defined in claim 12 including covering the substantially the entire fuel cell system in said enclosure material.

16. The method as defined in claim 12 including the further steps of:
selecting a first material to be applied as a first layer of said enclosure; and
selecting a second material to be applied as a second layer of said enclosure.

17. The method as defined in claim 16 including the further steps of:

selecting one portion of said fuel cell system to be enclosed by said first material; and

wrapping substantially the entirety of said fuel cell system in the second layer of said enclosure.